How one CIO's move to cloud MES brought significant gains

Manesh Patel, Senior VP and CIO at Sanmina Corporation

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Led by Manesh Patel, Sanmina moved from an on-premises system to 42Q -- a cloud MES -- for real-time manufacturing and supply chain visibility, improved quality control and yield.

When Manesh Patel, current senior vice president and CIO of Sanmina Corporation joined the company in 1997, it was through an acquisition of Alexis International -- a modest-size company focused on circuit board assembly and other types of electronic manufacturing.

Today, Sanmina is ranked 414 among Fortune 500 companies and involved in a full range of complex manufacturing activities for industries ranging from medical to defense and aerospace, computing, storage and industrial equipment. For Patel, who began his IT career in Sanmina 20 years ago in the applications group, the one thing that remained constant was staying top-notch in manufacturing by keeping up with emerging information technology.

Carrying that legacy forward, about three years ago, Patel saw yet another opportunity that would "make a step function change" in the company's business operations, and put it on a different path. Patel saw this opportunity with 42Q, a cloud-based manufacturing execution system or cloud MES.

42Q is Sanmina's division that sells a pure-play multi-tenant SaaS manufacturing execution system.

A typical 42Q management dashboard

“We build a lot of these in-house systems, and thought, how do we really move to the next generation?” Patel said. “When we saw 42Q and its capabilities, we thought, wow. This really puts us on a different trajectory.”

“Not only does it meet our needs today in terms of manufacturing systems, but it also enables us to meet our future needs, especially as we look towards Industry 4.0 and some of the newer technologies and capabilities everybody was talking about,” he added.

42Q is a business unit of Sanmina, developed to meet the manufacturing requirements of the company, but today it serves as a separate commercial entity.

Patel, who has been at the forefront of the 42Q deployment efforts, observed that the company is now beginning to see the benefits of migration to the cloud MES platform.

“[We have] the ability to connect machines directly into our manufacturing system into 42Q, and use that data whether it is to improve yield information, improve quality for reporting, machine efficiency or using that information for scheduling work ... things like that,” Patel explained.

42Q Cloud MES supports speed, flexibility and cost

Tasked with manufacturing 300,000 units a year of a brand new, Class III medical device, Patel knew that the new device could not be manufactured in any sort of manual way. The company would have to automate the process end to end, in addition to ensuring a high level of quality and integrity in terms of meeting U.S. Food and Drug Administration requirements.

There were three significant requirements. The first of which was the need for continuous improvement in terms of speed, quality and overall performance. The second was flexibility that would allow fast modifications to the system. The third was cost: Lower manufacturing costs would enable the company’s customers to remain competitive in their respective markets.

Patel knew that, if anything, these needs would continue to accelerate in the future and only companies that adopted new production models would be successful.

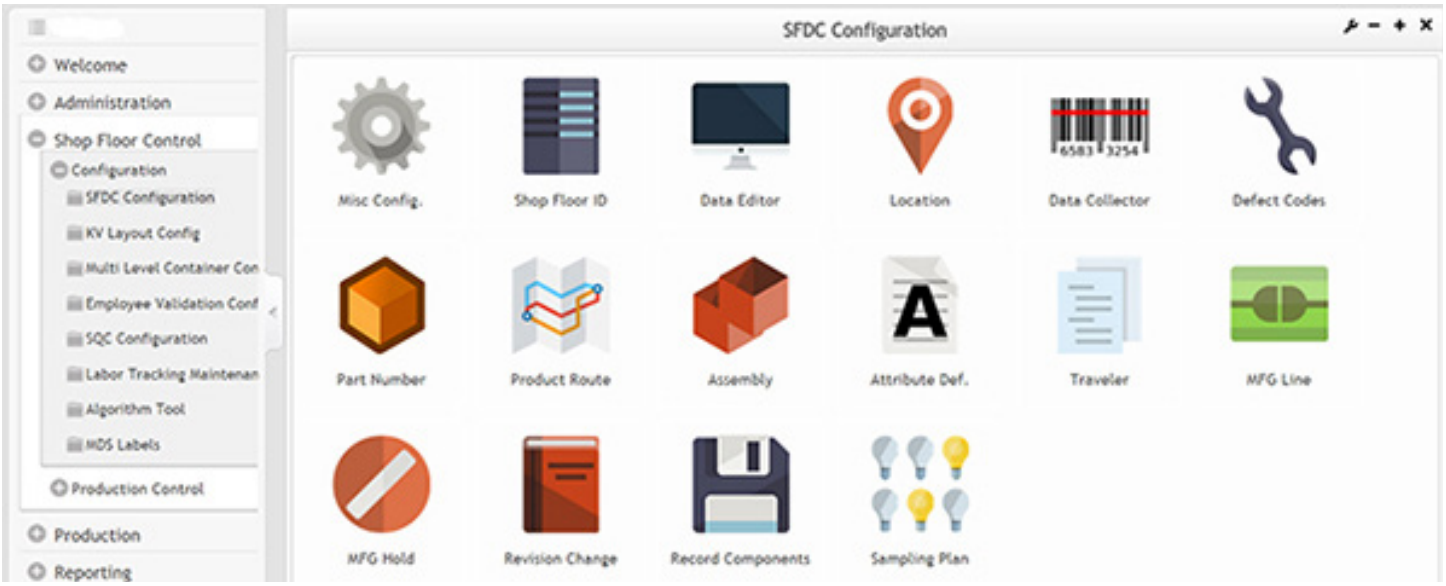
After taking the time to redesign the manufacturing process, the company used 42Q to connect all equipment, which enabled them to get machine data, analyze it in pseudo real time and make sure the devices were being manufactured to the required quality, with multiple levels of component information and 100% product traceability.

Stressing on the need for supply chain visibility and traceability Patel explained, say from a supplier we get feedback that there’s a problem with one of the [electronic] components, traceability allows us to track that component and recall it. Or say, a customer found a problem with a unit, then we can track it backward to the component batch it came from, and assess where else that batch was used in manufacturing.

“So both ways we needed to do traceability, backwards and forwards,” he added.

Sanmina initially built only a few hundred units per year, but by the end of 2017 hopes to ramp up the program to make 20 million units per year and for Patel, this was possible due to the ability to scale in the cloud.

Using the SaaS-based 42Q meant “we could implement changes faster, reconfigure and modify systems relatively easily and [for] total cost of ownership it was lower than what we had seen historically,” Patel said.



Shop floor control system as seen on the 42Q cloud-based MES dashboard

Cloud MES connects more factories worldwide

Since deploying 42Q, Sanmina has successfully connected over 25,000 pieces of manufacturing equipment across 50 factories worldwide and continues to transition many more.

Patel said the 42Q deployment was much faster than that of a traditional on-premises system. He said the company brought up a new factory “literally in weeks” as opposed to an on-premises system that would take a minimum three to six months.

“Once we’d got one or two of our factories up and running in the cloud, transitioning more and more of our factories was relatively straightforward,” Patel said, “and we were able to scale very efficiently in the cloud.”

From an IT standpoint, for Patel, the biggest benefit of migrating to the 42Q MES was that it allowed the company to focus its energy on manufacturing -- its core function -- and not running IT.

Factory floor of Sanmina Corporation manufacturing plant

Near-term technology the number one focus

“We see a lot of people are talking about Industry 4.0, but I would state that many of those things are still very early; a lot of folks are still trying to figure out exactly how much of it is real today ... and how much of this is further out,” Patel said.

Moving ahead, Patel suggested, Sanmina will continue to experiment with some of the Industry 4.0 capabilities while working with 42Q cloud MES platforms and some of the more near-term technologies.

Patel considered them to be robotics, automated guided vehicles, integrations of systems such as connecting manufacturing with the warehouse, the supply chain, the equipment, and the ERP and the product lifecycle management, among other things.

Operational technology a significant challenge

Patel, who has extensive experience in IT and manufacturing operations, pointed out that operational technology (OT), though relatively new, poses a significant challenge to most IT organizations and calls for stronger partnership between IT, engineering and operations.

He observed that more manufacturing equipment is getting “digitized” or computerized, which means traditional IT is being applied more and more to manufacturing equipment, applications, networks and databases. What’s more, such digitization poses challenges in speed and security.

“That really brings us as the IT professionals into the OT world,” Patel said.

“I think there are a number of IT organizations out there focusing IT on corporate functions, and they really haven’t got into the IT in manufacturing space,” he said.

“If there’s any IT organization that hasn’t got into manufacturing, or manufacturing company that hasn’t got in IT, I think it’s absolutely urgent that they do that now,” he stressed. “A year from now, two years from now, three years from now it might be too late.”